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## RECORDS OF FISHES FOR THE MIDDLE ATLANTIC STATES AND VIRGINIA.

BY HENRY W. FOWLER.

In this paper a list of the species obtained from each State is given, with a summary of all the localities representing material which I have not noted before. It is desirable to place these all on record as of value in geographical distribution. In preparing this article many specimens have been examined, often embracing in numbers many thousands, of which the more important were preserved for the collections of the Academy, besides others studied at the various fisheries, markets and elsewhere. Among many of the latter class one often meets with large forms undesirable for preservation, so that but few were saved. Some species were quite rare, and others at least new records for the States in which they were taken. Still others are interesting in pointing out new limits or features in their distribution. Two pelagic species, wandering to the coasts of New Jersey, are apparently new.

## NEW YORK.

All the specimens from this State, listed below, were received from Mr. T. D. Keim during the past few years.<sup>1</sup>

*Anohovia eurystole* Swain and Meek.

One taken at Long Beach, Long Island, on August 20, 1911. Other fishes noted at this locality were *Raja eglanteria*, *Fundulus majalis*, *F. heteroclitus macrolepidotus*, and *Ammodytes americanus*.

*Notropis bifrenatus* (Cope).

Dungan Hill, Staten Island.

*Fundulus majalis* (Walbaum).

Hunter's Island, in Long Island Sound.

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<sup>1</sup> An adult *Pygosteus pungitius* and ten young *Poronotus triacanthus* from Long Island Sound near Darien, Conn., were also secured in the summer of 1910. The latter were taken from under a floating medusa.

I also have *Seserinus paru*, *Chaetodipterus faber* and *Lagocephalus lævigatus* secured in August of 1907 at Nantucket, Mass., by Dr. Benjamin Sharp. These were all taken from inside the Great Point traps. Dr. Sharp has also reported a large *Tarpon atlanticus* taken at the same locality on September 30, 1909. I mention these as occasional species in the New England region of the Virginian province.

**Fundulus heteroclitus macrolepidotus** (Walbaum).

Hunter's Island.

**Fundulus diaphanus** (Le Sueur).

Hudson River in Greene Co.

**Mugil cephalus** Linnaeus.

Four young from South Beach, Long Island, on July 16, 1911.

**Seriola zonata** (Mitchill).

Long Beach.

**Pseudopriacanthus altus** (Gill).

Young from Long Beach on August 2, 1911.

**Tautoglabrus adspersus** (Walbaum).

Hunter's Island.

**Myoxocephalus octodecimspinosus** (Mitchill).

Two very young from tide-pools at Rye Beach on May 19, 1910.

#### NEW JERSEY.

**Squatina squatina** (Linnaeus).

A female about 40 inches long was secured at Sea Isle City, through Mr. W. J. Fox, on July 7, 1911. It was taken in the off-shore pounds, and known to the fishermen as "lizard fish." A large *Mola mola*, weighing about 200 pounds, was also secured at the same time, though not preserved.

**Atopichthys novæ-cæsariensis** sp. nov. Fig. 1.

Head about  $13\frac{2}{3}$ ; depth about  $11\frac{2}{3}$ ; snout about  $4\frac{1}{2}$  in head, measured from upper jaw tip; eye 4; maxillary  $2\frac{1}{4}$ ; interorbital  $3\frac{1}{4}$ ; head depth at occiput  $2\frac{1}{3}$ ; muscular segments about  $70 + 50$ .

Body oblong, greatly compressed, tapering well anteriorly to region of greatest depth about third, fourth and fifth sixths of trunk length. Tail tapering rather suddenly, though less gradual than front of body.

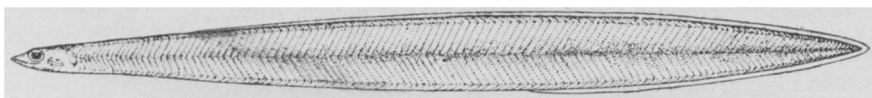


Fig. 1.—*Atopichthys novæ-cæsariensis* Fowler. Type.

Head widest part of body, slightly compressed, profiles similar. Snout conic, compressed slightly, basal width trifle greater than its length. Eye large, rounded, its hind edge about midway in head. Mouth cleft straight, extends back about opposite eye centre.

Mandible depressed, shallow, rami low, symphysis extending forward slightly before snout tip. Maxillary not distinct. Teeth long, slender, uniserial in jaws, and flaring out all around jaw edges. No teeth on palate. Tongue not distinct. Nostrils well separated small pores, on side of snout, anterior near snout tip and posterior close before eye. Interorbital a little convex.

Gill-opening small, inferior.

Body naked, smooth, myocommas and myomeres distinct.

Vertical fins low, continuous around caudal and latter less than eye. Pectoral not evident. Vent about last  $\frac{2}{3}$  in total length.

Color in alcohol uniform pale brownish. Iris slaty. Along ventral edge of body 2 series of dark chromatophores, these series closely approximated, and a single chromatophore about opposite each myomere. No other chromatophores.

Length  $4\frac{3}{4}$  inches.

Type No. 982, A. N. S. P. Beesley's Point, Cape May County, New Jersey. Charles E. Ashmead.

Only a single example, described above. It appears to be related to species without pectoral fins, such as *Atopichthys gillii* (Eigenmann and Kennedy) and *A. strommani* (Eigenmann and Kennedy). It is, however, much longer and more slender, with the vent different, and the muscular bands with other formula.

(Named for New Jersey.)

***Atopichthys phillipsi* Fowler.**

Another example of this interesting fish, only known before from the type, was secured at ("Mountain Island") Corson's Inlet on June 26, 1909, by Dr. R. J. Phillips. On this occasion Dr. Phillips notes *Mustelus mustelus*, *Raja eglanteria*, *Brevoortia tyrannus*, *Fundulus majalis*, *F. heteroclitus macrolepidotus*, *Menidia menidia notata*, *Centropristis striatus*, *Bairdiella chrysura*, *Menticirrhus saxatilis*, *M. americanus*, *Sciaenops ocellatus*, *Cynoscion regalis*, *Tautoglabrus adspersus*, *Tautoga onitis*, *Spheroides maculatus*, *Paralichthys dentatus* and *Opsanus tau*.

***Felichthys marinus* (Mitchill).**

One taken August 11, another August 14, and still another August 20, 1911, at Corson's Inlet.

***Fundulus luciae* (Baird).**

Mr. W. B. Davis secured one on June 21, 1911, in the salt-ponds near Peck's Bay. It was associated with *F. heteroclitus macrolepidotus* and *Cyprinodon variegatus*. On July 22 Mr. D. McCadden

secured *Apeltes quadracus*, *Syngnathus fuscus*, *Menidia menidia notata* and *Menticirrhus saxatilis* in Peck's Bay.

**Gambusia gracilis** Heckel.

Abundant in tributaries of Goshen Creek, near Goshen, on October 13, 1911, where many were secured by Mr. F. Leaming and the writer. *Fundulus heteroclitus macrolepidotus* was the only species we found associated, though in the upper reaches, while *Gambusia* was absent, *Abramis crysoleucas*, *Erimyzon sucetta oblongus* and *Umbra pygmaea* were found. In Bidwell Creek we found *Anguilla chrisypa*, *F. majalis*, *F. heteroclitus macrolepidotus*, *Cyprinodon variegatus*, *Menidia beryllina cerea*, *M. menidia notata*, *Bairdiella chrysura*, *Leiostomus xanthurus*, *Micropogon undulatus* and *Pogonias cromis*. Myriads of *Palæmonetes vulgaris* were also secured. In Crooked Creek we found *A. chrisypa*, *F. heteroclitus macrolepidotus*, *F. diaphanus* and *Apeltes quadracus*.

**Tylosurus raphidoma** (Ranzani).

Mr. W. J. Fox secured an adult example at Sea Isle City during the past summer, besides examples of *Rachycentron canadus*, *Balistes carolinensis*, *Stephanolepis hispidus*, *Lagocephalus lævigatus*, *Alutera shæpfi*, *Lophopsetta maculata* and *Echeneis naucrates*.

**Sphyræna borealis** De Kay.

Dr. R. J. Phillips secured an example about 10? inches long, taken from the stomach of a blue fish (*Pomatomus saltatrix*) caught at Corson's Inlet, on September 15, 1911. Other interesting species obtained by Dr. Phillips at this locality are *Leptocephalus conger*, *Chilomycterus schæpfi*, *Rissola marginata* and a young *Pogonias cromis*.

**Lepomis incisor** Valenciennes.

Mr. B. H. Gledhill secured an adult in Warrington Pond, at Tomlin, on September 23, 1911.

**Lyosphæra globosa** Evermann and Kendall.

An example was secured at Anglesea some years ago by the late Uelma C. Smith. It is now in the collection, and in good preservation. This species has not been recorded from New Jersey before, and this is therefore evidently its most northern range.

**Etropus microstomus** (Gill).

Mr. W. B. Davis and the writer secured three examples of this interesting flounder on June 21, 1911, in Great Egg Harbor Bay at Ocean City. Other fishes we also found there were *Mustelus mus-*

*telus*, *Raja eglanteria*, *Pomolobus mediocris*, *P. pseudoharengus*, *Anchovia mitchilli*, *Fundulus majalis*, *Syngnathus fuscus*, *Menidia menidia notata*, *Trachinotus carolinus*, *Cynoscion regalis*, *Menticirrhus saxatilis*, *Lophopsetta maculata*, *Paralichthys dentatus*, *Pseudopleuronectes americanus* and *Achirus fasciatus*. This is noteworthy as all the pleuronectids were found associated.

***Antennarius teleplanus* sp. nov.** Fig. 2.

Head (measured to axil of pectoral) about  $1\frac{3}{4}$ ; depth about  $1\frac{1}{2}$ ; D. I—I—I—12; A. 7; P. 11; V. 5; head width (measured to axil of pectoral) about  $1\frac{2}{5}$  in its length; snout  $5\frac{1}{4}$  in head, measured from median upper jaw tip to gill-opening; eye  $10\frac{1}{2}$ ; maxillary  $2\frac{2}{3}$ ; mandible length  $2\frac{1}{2}$ ; mouth width at ricti  $2\frac{1}{6}$ ; interorbital  $4\frac{1}{3}$ ; bait about  $2\frac{2}{3}$ ; second dorsal spine about  $4\frac{1}{2}$ ; third dorsal spine about  $3\frac{1}{6}$ ;

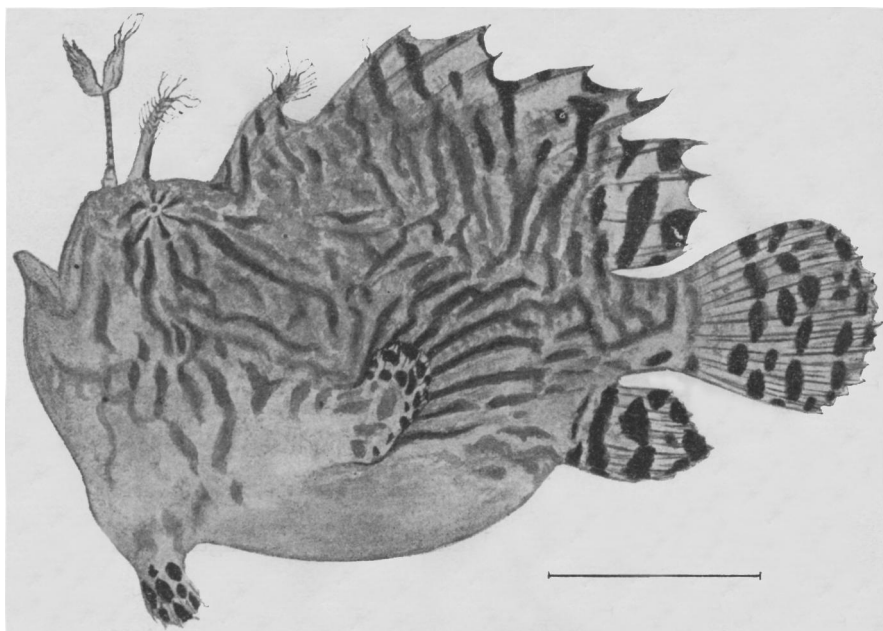


Fig. 2.—*Antennarius teleplanus* Fowler. Type.

fifth dorsal ray about 3; anal base about 4; fourth anal ray about  $2\frac{7}{8}$ ; caudal  $2\frac{1}{8}$ ; least depth of caudal peduncle  $4\frac{2}{5}$ ; pectoral base  $5\frac{1}{2}$ ; ventral base  $6\frac{1}{4}$ .

Body deep, well compressed, deepest at dorsal origin, back elevated with approximating surfaces, and rounded belly with swollen appearance. Caudal peduncle compressed, rather small, its length about  $\frac{3}{5}$  its least depth.

Head very large, deep, and with mandible closed anterior profile nearly evenly convex. Upper surfaces approximating like those of back, and lower well swollen convexly till much wider. Snout short, little inclined from horizontal forward, length about  $\frac{2}{3}$  its width. Eye small, rounded, high, lateral, anteriorly below second dorsal spine. Mouth large, wide, nearly vertical. Premaxillaries well protractile. Maxillary long, nearly vertical, its hind lower edge about opposite front eye edge, and greatest distal expansion but trifle less than eye. Upper lip thin, tough, and lower thicker though also tough. Teeth small, sharply pointed, rather slenderly conic and in rather narrow bands in jaws. No teeth on median line of mouth roof, though 2 patches of teeth, similar to those in jaws, in each palatine region. Two small patches of similar pharyngeal teeth above and 2 patches also below. Tongue large, broad, depressed, free in front and along sides, smooth, and front edge convex. Mandible not very powerful, broad, with slight symphyseal knob in front, and rami but moderately expanding at their posterior articulations. Nostrils small, obscure, about last  $\frac{2}{3}$  between eye front and edge of upper jaw. Interorbital slightly convex.

Gill-opening small slit at lower pectoral base well before middle in entire length of fish.

Body very finely roughened everywhere, except at lower surfaces of pectorals and ventrals. Tubercles in many regions bifid. Tubercles on head above and l. l. anteriorly rather large, or as spinescent clusters. A smooth area on interorbital between second and third spines. Extending down along preopercular region some obscure spinescent clusters. No cutaneous flaps, or if a few present very inconspicuous. L. l. scarcely evident, except anteriorly, and even there obsolete.

Bait very slender and not extending beyond middle of third depressed dorsal spine, bulbous and bifid at end, and each division with a few short filaments. Second dorsal spine inserted close after bait, largely free, mobile, though not depressible back to origin of third dorsal spine. Latter with only end mobile, united behind for large part by broad basal membrane, and depressible spine not reaching back to origin of rayed dorsal. Soft dorsal rather high, long, its margin very unevenly gashed as some rays are inserted nearer one another than to others. Anal small, well posterior, and extending slightly further back on caudal peduncle, median rays longest with edge of fin slightly gashed in places. Caudal large, rounded behind with median rays longest. Pectoral moderate,

tips of rays projecting slightly beyond membranes. Ventrals similar, though smaller than pectorals. Vent rather conspicuous, close before anal.

Color in alcohol with ground tint dull olivaceous to yellowish, former largely above and latter obtaining below. A number of blackish or dusky narrow streaks radiate from eye, where they extend over iris to pupil. Several similar streaks radiate from upper edge of third dorsal spine. Soft dorsal with numerous black streaks, broad, and many broken into large blotches or spots, nearly vertical or slightly inclined back, and extending down on back more or less regularly till level with upper edge of caudal peduncle. Then all more inclined forward towards pectoral axilla and abdomen. Though body blotched with dusky between gill-opening and vent, no blotches on entire belly between ventrals and vent, except around latter. Anal with blackish blotches or streaks like those on soft dorsal, these in about four rows. Caudal with three distinct rows of transverse black spots or blotches, smaller than on soft dorsal and anal. Pectoral and ventral covered with large black blotches both above and below, and several obsolete ones before base of former. Bait pale, with narrow transverse blackish bars. Gill-opening pale. Tongue, and mouth inside, whitish generally, though former with dusky and blackish mottlings. Pupil pale. Most of dark blotches on all fins show along their edges a paler or more whitish shade than ground color.

Length about 4 inches.

Type No. 38,162, A. N. S. P. Corson's Inlet, Cape May County, New Jersey. Caught in the bait-net on September 30, 1911. Dr. R. J. Phillips.

Only the type known. It closely resembles *Antennarius scaber* (Cuvier), but differs in the absence of the numerous dermal body flaps, as well as the pattern of coloration shown by Valenciennes.<sup>2</sup> *Antennarius tigris* (Poey) is also another species closely related, though differing markedly, if Poey's figure is to be trusted. Poey shows the caudal almost entirely spotted, a row of five black spots in a slightly oblique row on anal, and bait with its bulbous end longer than basal portion, in fact reaching back to tip of first soft dorsal ray.

(*Τηλέπιδος*, wandering far; so named as no American member of the genus ever before recorded so far north of Florida.)

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<sup>2</sup> *Règne Animal Cuv.*, Ed. Luxe, 1839, Pl. 85, fig. 1.

Besides the above records a few of the numerous small collections, made during the past year, in some localities where material has not been obtained before, may be of interest.

During June Mr. W. B. Davis and the writer secured the following: in Cedar Swamp Creek *Pomolobus mediocris*, *Alosa sapidissima*, *Anguilla chrysypa*, *Abramis crysoleucas*, *Fundulus heteroclitus macrolepidotus*, *F. diaphanus*, *Mugil curema*, *Eupomotis gibbosus* and *Morone americana*; in a tributary of the Tuckahoe River at Johnson's Mill, *Pomolobus mediocris*, *Abramis crysoleucas*, *Ameiurus natalis prosthistius*, *Fundulus heteroclitus macrolepidotus*, *F. diaphanus*, *Esox americanus*, *E. reticulatus*, *Aphredoderus sayanus*, *Mesogonistius chætodon*, *Enneacanthus gloriosus* and *Boleosoma nigrum olmstedii*; a tributary of the Tuckahoe River at Wallace's Mill, *Notropis chalybæus abbotti*, *Erimyzon succetta oblongus* and *Boleichthys fusiformis*.

On July 3 Mr. W. T. Innes, Jr., and the writer secured the following in Pancoast's Run, near Pancoast's Mill: *Umbra pygmæa*, *Esox reticulatus*, *Aphredoderus sayanus*, *Mesogonistius chætodon* and *Enneacanthus gloriosus*. On December 2 we visited Cohansey Creek at Bridgeton, in Cumberland County, and found: *Anguilla chrysypa*, *Abramis crysoleucas*, *Notropis bifrenatus*, *Fundulus heteroclitus macrolepidotus*, *F. diaphanus*, *Apeltes quadracus*, *Enneacanthus gloriosus* and *Eupomotis gibbosus*. A small "water boatman," kindly identified by Messrs. Henry Skinner and E. T. Cresson, Jr., as *Corixa brimleyi*, a North Carolina species, was secured, and is another interesting addition to the fauna of New Jersey.

An interesting collection made at Cape May Point by Mr. E. R. Brown during the past summer contained: *Sphyrna zyggæna*, *Squalus acanthias*, *Raja erinacea*, *Pomolobus æstivalis*, *Brevoortia tyrannus*, *Anchovia mitchilli*, *Tylosurus marinus*, *Hippocampus hudsonius*, *Mugil cephalus*, *Selene vomer*, *Trachinotus carolinus*, *Pomatomus saltatrix*, *Centropristis striatus*, *Lagodon rhomboides*, *Leiostomus xanthurus*, *Menticirrhus saxatilis*, *Spheroides maculatus*, *Chilomycterus schæpfi*, *Prionotus evolans strigatus*, *Rissola marginata* and *Pseudopleuronectes americanus*. Two interesting examples of *Chloridella empusa* were also obtained, and this species was reported to be abundant.

#### PENNSYLVANIA.

Mr. R. W. Wehrle has collected extensively in Indiana County, forwarding many interesting collections to the Academy. The

other material has been secured by the writer largely, though often with the assistance of others whom I have acknowledged elsewhere.

***Petromyzon marinus*** Linnæus.

Delaware River at Torresdale, Philadelphia County. I also examined a young one from Goldsboro, York County, in the possession of Mr. P. Hertzog.

***Ichthyomyzon concolor*** (Kirtland).

Cherry Run, tributary to Crooked Run, and McKenny Run, Indiana County.

***Acipenser brevirostrum*** Le Sueur.

Delaware River at Torresdale, Philadelphia County. I also found one at Bristol, Bucks County, on May 3, 1908.

Though I have examined examples of *A. rubicundus* at Erie and in the pounds near by, none were obtained for our collection.

***Amiatus calvus*** (Linnæus).

Erie. A few were taken in the pounds in 1907.

***Pomolobus pseudoharengus*** (Wilson).

Abundant in Scott's Creek, Bucks County.

***Coregonus clupeaformis*** (Mitchill).

Erie.

***Leucichthys artedi*** (Le Sueur).

Erie.

***Salvelinus fontinalis*** (Mitchill).

Brandywine tributary near New Garden, Chester County; Trout Run, Lancaster County; Sugar Valley Run, Mifflin County.

***Anguilla chrisypa*** Rafinesque.

Long Neck at Tinicum Island, Delaware County; Valley Forge and Gladwyne, Montgomery County; Neshaminy Creek near Langhorne, Bridgetown, Etterton, Long Pond, Guinea Creek, Scott's Creek, Bucks County; McCall's Ferry, Lancaster County; Juniata River at Newton Hamilton, Mifflin County.

***Campostoma anomalum*** (Rafinesque).

McKenny, Home, Burnhamer, Rock, Saltgiver, Besnham, Broad Head, Smitten, Martin's, Mud Lick, Smicksburg, Groft's and McCormick's Runs, Ross Run and branch, Elders and Little Runs, Pickering Run and small branch, feeder to Crooked Run, Cowanshanoc, Grant and Pine Townships, tributary of North Branch of Two Lick Creek, Pine Creek and Marion Branch, Susquehanna

Creek, branches of Big and Little Mahoning and Crooked Creeks, Indiana County.

***Pimephales notatus* (Rafinesque).**

McKenny, Home, Burnhamer, Besnham, Smitten, Martin's, Mud Lick, Smicksburg, Groft's and McCormick's Runs, Ross Run and branch, Elders and Little Runs, Pickering Run and small branch, Crooked Run and tributary, Cowanshanoc, Grant and Pine Townships, tributary of North Branch of Two Lick Creek, Pine Creek and Marion Branch, Susquehanna Creek, branches of Big and Little Mahoning and Crooked Creeks, Indiana County; Allegheny River at Foxburg, Clarion County.

I have also found it abundant in the Schuylkill River near the mouth of Mill Creek in Montgomery County. This is the most eastern locality in the State at which the species has been obtained.

***Semotilus bullaris* (Rafinesque).**

Walton Run near Byberry, Philadelphia County; Neshaminy Creek near Langhorne, Etterton and Long Pond, Bucks County; Naylor's Run, Delaware County; Pennypack Creek near Huntingdon Valley and Walnut Hill, Montgomery County; Crum Creek near White Horse and Reese's Run, Chester County; Juniata River at Newton Hamilton, Mifflin County.

***Semotilus atromaculatus* (Mitchill).**

Trout Creek near Centerville, Mill Creek at Gladwyne, Montgomery County; Brookfield Run, Mill Creek at Flushing, Neshaminy Creek near Etterton, Tottam Creek, Bucks County; tributary of Brandywine below Chadd's Ford Junction, Chester County.

Hacker's, Trout and Akron Runs near Ephrata, Lancaster County; Sugar Valley Run, Mifflin County; Wopsonomick Valley Run, Blair County.

Tributary of Allegheny River at Warren, Warren County; Allegheny River at Foxburg, Clarion County; Wehrle's, Simpson's, McKenny, Burnhamer, Besnham, Rock, Heilman, Smitten, Martin's, Mud Lick, Smicksburg, Groft's, McCormick's Runs, Ross Run and branch, Elders and Little Runs, Pickering Run and small branch, feeder to Crooked Run, Grant and Pine Townships, tributary of North Branch of Two Lick Creek, Pine Creek and Marion Branch, Susquehanna Creek, Branches of Crooked and Little Mahoning Creeks, Cowanshanoc, Indiana County; Castleman River at Meyersdale, Somerset County.

***Leuciscus elongatus*** (Kirtland).

Simpson's, Cherry, McKenny, McCormick's, Mud Lick, Smicksburg, Groft's, Allen's, Home, Burnhamer, Besnham, Ross, Rock, Saltgiver, Broad Head, Elders, Little, Crooked, Smitten, Pickering and Martin's Runs, tributary North Branch Two Lick Creek, Pine Creek and Marion Branch, Pine Township, Susquehanna Creek, branches of Ross Run and Crooked Creek, Indiana County.

***Abramis crysoleucas*** (Mitchill).

Hunter's Run tributary to Ridley Creek and upper branch of Taylor's Run, Chester County; Long Neck at Tinicum Island, Naylor's Run, Delaware County; Gladwyne, Montgomery County; Torresdale, Philadelphia County; Guinea Creek, Bucks County.

Cocalico Creek near Denver and Swamp Bridge, Lancaster County.

***Notropis bifrenatus*** (Cope).

Torresdale, Philadelphia County; Neshaminy Creek near Langhorne, Etterton and Long Pond, Mill Creek at Wycombe, Guinea Creek, Bucks County; Naylor's Run, Delaware County.

***Notropis deliciosus*** (Girard).

Mr. Wehrle secured one from a tributary to Ross Run, Indiana County, in September of 1911. This species is only known from Pennsylvania waters by the previous record of Evermann and Bollman, for the Monongahela basin.

***Notropis procne*** (Cope).

Neshaminy Creek near Etterton and Long Pond, and Mill Creek at Wycombe, Bucks County.

***Notropis hudsonius amarus*** (Girard).

Bustleton, Philadelphia County; Neshaminy Creek near Langhorne, Bridgetown, Etterton and Long Pond, Bucks County.

***Notropis whipplii analostanus*** (Girard).

Walton Run near Byberry, Philadelphia County; Schuylkill River near Mill Creek, Gladwyne and near-by quarry-holes, Valley Forge, Walnut Hill, Montgomery County; first and second tributaries of Brandywine below Chadd's Ford Junction, Crossart, Chester County; Neshaminy Creek near Langhorne, Etterton and Long Pond, Mill Creek at Wycombe, Scott's Creek, Bucks County.

Akron and Trout Runs near Ephrata, Lancaster County; Juniata River at Newton Hamilton, Mifflin County.

***Notropis cornutus*** (Mitchill).

Tributary of Brandywine below Chadd's Ford Junction, Crossart, Crum Creek near White Horse, Reese's Run, Chester County;

Naylor's Run, Delaware County; Schuylkill River at Mill Creek estuary, Beth Ayres, Walnut Hill, Montgomery County; Walton Run near Byberry, Philadelphia County; Tottam Creek, Neshaminy Creek near Langhorne, Bridgetown, Etterton, Long Pond, Mill Creek at Flushing, Mill Creek at Wycombe, Bucks County; tributary of Bushkill Creek at Belfast, Northampton County.

Trout Run, Witmer's Mills and Smokestown Run, Lancaster County.

Tributary North Branch of Two Lick Creek, feeder to Crooked Run, Grant and Pine Townships, Burnhamer, Besnham, Ross, Saltgiver, Broad Head, Elders, Little, Groft's, Mud Lick, Crooked, Smicksburg, Smitten, Hileman and Pickering Runs, Susquehanna Creek, small branch of Pickering Run, branch of Big Mahoning Creek, Cowanshanoc, branch of Crooked Creek, McCormick's Run and branch of Ross Run, branch of Little Mahoning Creek, Indiana County.

***Notropis rubrifrons* (Cope).**

Two from a small branch of Pickering Run and seventeen from a branch of Big Mahoning Creek, Indiana County. Only known from the Kiskiminitas and Monongahela basins, in Pennsylvania.

***Notropis photogenis amœnus* (Abbott).**

Abundant in the Neshaminy Creek near Langhorne and Bridge-town, Bucks County.

***Ericymba buccata* Cope.**

Two Lick Creek, small branch of Pickering Run, Ramsey's, Cherry, Burnhamer, Besnham, Mud Lick, Groft's, Ross, Elders, Little, Smitten and Pickering Runs, Pine Township, tributary North Branch of Two Lick Creek, branch and feeder to Crooked Run, Indiana County.

***Rhinichthys atronasus* (Mitchill).**

Brandywine tributary below Chadd's Ford Junction, Crossart, Crum Creek near White Horse, Reese's Run, Hunter's Run tributary to Ridley Creek, Chester County; Naylor's Run, Reese's Run near Central Square, Delaware County; Walton Run near Byberry, Philadelphia County; Beth Ayres, Walnut Hill, Mill Creek at Gladwyne, Trout Run near Centerville, Montgomery County; Neshaminy Creek near Langhorne, Etterton, Long Pond, Mill Creek at Flushing, Brookfield Run, Mill Creek at Wycombe, Bucks County; tributary of Bushkill Creek at Belfast, Northampton County.

Hacker's Run near Ephrata, Cocalico Creek near Denver, Lan-

caster County; Sugar Valley Run, Mifflin County; Wopsonomick Valley Run and tributary from Kettle Reservoir, Blair County.

Tributary of Allegheny River at Warren, Warren County; Wehrle's, Cherry, McKenny, Rock, Allen's, Home, Burnhamer, Besnham, Saltgiver, Broad Head, Elders, Mud Lick, Little, Simpson, Groft's, Smitten, Pickering and Martin's Runs, Pine Creek and Marion Branch, Grant and Pine Townships. Susquehanna Creek, Cowanshanoc, branch of Big Mahoning Creek, branch of Crooked Creek, McCormick's Run, branch of Ross Run, feeder to Crooked Run, Indiana County; Castleman River at Meyersdale, Somerset County.

***Exoglossum maxillingua*** (Le Sueur).

Abundant in the Schuylkill River near mouth of Mill Creek, Montgomery County. This is the most eastern locality in Pennsylvania where the species has been secured. Also one from Mr. O. H. Behr taken in the Loyalsock Creek near Lopez, Sullivan County.

***Cyprinus carpio*** Linnæus.

Delaware River at Torresdale, Philadelphia County; Trout Run near Ephrata and Witmer's Mills, Lancaster County; Erie, Erie County.

***Carpisdes thomusoni*** Agassiz.

Erie.

***Catostomus commersonnii*** (Lacépède).

Crum Creek near Castle Rock, Hunter's Run tributary to Ridley Creek, Chester County; Naylor's Run, Delaware County; Mill Creek at Gladwyne, Beth Ayres, Walnut Hill, Valley Forge, Montgomery County; Walton Run near Byberry, Philadelphia County; Neshaminy Creek near Langhorne, Etterton, Long Pond, Mill Creek at Wycombe, Guinea Creek, Scott's Creek, Bucks County; tributary of Bushkill Creek at Belfast, Northampton County.

Trout Run near Ephrata, Lancaster County.

Castleman River at Meyersdale, Somerset County; Meadow Run near Ohio Pyle, Fayette County; Allegheny River at Foxburg, Clarion County; Wehrle's, Home, Mud Lick, Smicksburg, Groft's, Burnhamer, and Martin's Runs, Grant Township, tributary North Branch of Two Lick Creek, Pine Creek and Marion Branch, Cowanshanock, branch of Crooked Creek, McCormick's Run and branch of Ross Run, feeder to Crooked Run, Indiana County; Erie, Erie County.

**Catostomus nigricans** Le Sueur.

Cocalico Creek near Denver, Lancaster County; McKenny Run and tributary North Branch of Two Lick Creek, Indiana County; Neshannock River at Newcastle, Lawrence County.

**Erimyzon sucetta oblongus** (Mitchill).

Chester Creek near Cheney, Chester County; Walnut Hill, Montgomery County; Neshaminy Creek near Langhorne, Mill Creek at Wycombe, Guinea Creek, Bucks County; tributary of Bushkill Creek at Belfast, Northampton County; Cocalico Creek at Witmer's Mills, Lancaster County.

**Moxostoma aureolum** (Le Sueur).

Home, Elders, Little and Cowanshanoc Runs, branch of Big Mahoning Creek, Grant and Pine Townships, Indiana County; Erie, Erie County.

**Ameiurus lacustris** (Walbaum).

Erie.

**Ameiurus nebulosus** (Le Sueur).

Chester Creek near Cheney, Chester County; Mill Creek and quarry-holes at Gladwyne, Montgomery County; Long Neck at Tinicum Island, Delaware County; Scott's Creek, and Mill Creek at Wycombe, Bucks County; Trout Run near Ephrata and Witmer's Mills, Lancaster County; Cherry, McKenny and Simpson's Runs, Indiana County.

**Noturus flavus** Rafinesque.

Two Lick Creek and Cherry Run, Indiana County.

**Schilbeodes gyrinus** (Mitchill).

Big Neshaminy Creek at Etterton and near Long Pond, Bucks County.

**Esox americanus** (Gmelin).

Long Neck at Tinicum Island, Delaware County; Scott's Creek and near Penn Valley, Bucks County; Cocalico Creek at Witmer's Mills, Lancaster County.

I have examined several large examples of *E. masquinongy* at Erie, taken in Presque Isle Bay.

**Umbra limi** (Kirtland).

Meadeville, Crawford County.

**Umbra pygmaea** (De Kay).

Scott's Creek near Penn Valley and Guinea Creek, Bucks County.

**Fundulus heteroclitus macrolepidotus** (Walbaum).

Scott's Creek, Bucks County.

**Fundulus diaphanus** (Le Sueur).

Upper branch of Taylor's Run, Mill Run, tributary of Brandywine Creek below Chadd's Ford Junction, Chester County; quarry-hole near Gladwyne, Montgomery County; Neshaminy Creek near Langhorne, Etterton and Long Pond, Mill Creek at Wycombe, Scott's Creek, Bucks County.

**Tylosurus marinus** (Walbaum).

Delaware River at Philadelphia; Susquehanna River at Pequea, Lancaster County, in May, 1903.

**Eucalia inconstans** (Kirtland).

Allegheny River at Foxburg, Clarion County.

**Apeltes quadraeus** (Mitchill).

Scott's Creek, Bucks County.

**Pomoxis sparoides** (Lacépède).

Delaware River at Torresdale, Philadelphia County.

**Ambloplites rupestris** (Rafinesque).

Cherry and Simpson's Runs, Indiana County.

**Enneacanthus gloriosus** (Holbrook).

Delaware River at Torresdale, Philadelphia County.

**Lepomis auritus** (Linnaeus).

Hunter's Run, upper branch of Taylor's Run and Mill Run, tributaries of Ridley Creek, tributary of Brandywine below Chadd's Ford Junction, Chester County; Naylor's Run, Delaware County; Walton Run near Byberry, Philadelphia County; Mill Creek and Schuylkill River near Gladwyne, Walnut Hill, Montgomery County; Neshaminy Creek near Langhorne, Bridgetown, Etterton, Long Pond, Mill Creek at Wycombe, Scott's Creek, Bucks County.

**Eupomotis gibbosus** (Linnaeus).

Chester Creek near Cheney, Chester County; Long Neck at Tinicum Island, Delaware County; Walnut Hill, Montgomery County; Neshaminy Creek near Langhorne, Bridgetown, Long Pond, Etterton, Scott's Creek, Guinea Creek, Bucks County; Akron and Trout Runs near Ephrata, Cocalico Creek near Denver, Swamp Bridge and Witmer's Mills, Lancaster County.

**Micropterus dolomieu** Lacépède.

Schuylkill River near mouth of Mill Creek, Montgomery County; Neshaminy Creek near Bridgetown, Bucks County; Juniata River at Newton Hamilton, Mifflin County; Erie, Erie County. I also have examined many examples of *M. salmoides* at the last locality.

**Stizostedion vitreum** (Mitchill).

Erie, Erie County.

**Stizostedion canadense** (Griffiths).

Erie.

**Perca flavescens** (Mitchill).

Scott's Creek, Bucks County; Erie, Erie County.

**Percina caprodes** (Rafinesque).

Erie.

**Hadropterus macrocephalus** (Cope).

Tributary to North Branch of Two Lick Creek and Mud Lick Run, Indiana County.

**Boleosoma nigrum** (Rafinesque).

Allegheny River at Foxburg, Clarion County; McKenny, Simpson's, Allen's, Home, Bernham, Rock, Elders, Little, Smitten, Mud Lick, Groft's, Hileman and Martin's Runs, Grant and Pine Townships, tributary North Branch of Two Lick Creek, small branch of Pickering Run, branch of Big Mahoning Creek, branch of Crooked Creek, McCormick's Run and branch of Ross Run, feeder to Crooked Run, Pine Creek and Marion Branch, Indiana County.

**Boleosoma nigrum olmstedii** (Storer).

Reese's Run, Crum Creek near White Horse, Hunter's Run tributary to Ridley Creek, upper branch of Taylor's Run, Mill Run, Chester Creek near Cheney, tributary of Brandywine Creek below Chadd's Ford Junction, Chester County; Naylor's Run, Delaware County; Walton Run near Byberry, Philadelphia County; Mill Creek at Gladwyne, Walnut Hill, Montgomery County; Mill Creek at Flushing, Brookfield Run, Neshaminy Creek at Etterton, Long Pond, near Langhorne, Mill Creek at Wycombe, Guinea Creek, Bucks County; tributary to Bushkill Creek at Belfast, Northampton County.

Cocalico Creek near Ephrata and Denver, Trout and Smokestown Run, Lancaster County; Sugar Valley Run, Mifflin County; Wopsonomick Valley Run, Blair County.

**Etheostoma flabellare** Rafinesque.

McKenny, Cherry, Simpson's, Ross, Groft's, Smitten and Hileman Runs, Pine Township, tributary North Branch Two Lick Creek, feeder to Crooked Run, Indiana County.

**Roccus chrysops** (Rafinesque).

Erie, Erie County.

**Morone americana** (Gmelin).

Scott's Creek, Bucks County.

**Aplodinotus grunniens** Rafinesque.

Erie.

**Cottus icталops** Rafinesque.

Simpson's, Allen's, Smitten, McKenny and Cherry Runs, Susquehanna Creek, Indiana County; Meadow Run near Ohio Pyle, Fayette County.

**Cottus gracilis** Heckel.

Trout Run near Ephrata, Lancaster County.

**Lota maculosa** (Le Sueur).

Erie.

#### DELAWARE.

A few collections made during the past season, in Newcastle County, are included below.

**Anguilla chrisypa** Rafinesque.

West Branch of Christiana Creek (near Iron Hill, Md.).

**Semotilus atromaculatus** (Mitchill).

Montchanin.

**Abramis crysoleucas** (Mitchill).

West Branch of Christiana Creek (near Iron Hill).

**Notropis whiplii analostanus** (Girard).

Granogue and West Branch of Christiana Creek (near Iron Hill).

**Notropis cornutus** (Mitchill).

Tributaries of the Brandywine near State line, Guyencourt, and West Branch of Christiana Creek (near Iron Hill).

**Rhinichthys atronasus** (Mitchill).

Tributaries of the Brandywine near State line, Granogue, Guyencourt and Montchanin.

**Catostomus commersonnii** (Lacépède).

Guyencourt and West Branch of Christiana Creek (near Iron Hill).

**Lepomis auritus** (Linnæus).

West Branch of Christiana Creek (near Iron Hill).

**Eupomotis gibbosus** (Linnæus).

With preceding species.

**Boleosoma nigrum olmstedii** (Storer).

Guyencourt and West Branch of Christiana Creek (near Iron Hill).

## MARYLAND.

Most of my own collections were made in Cecil County, while a few smaller ones are from Baltimore. In that city I have also examined many market fishes, especially those alleged to have been taken in Chesapeake Bay. Mr. E. G. Vanatta made collections at Chestertown, and Messrs. Hermann Behr and T. D. Keim at Jennings, in Garrett County.

***Petromyzon marinus* Linnaeus.**

Abundant in the spring and in early June in Clearwater Brook at Bacon Hill, tributary to the Elk River basin. In this stream I have secured many young, and also in the Little Bohemia Creek. Fishermen say lampreys are abundant in the Elk and North East Rivers and at Rock Hall.

***Acipenser sturio* Linnaeus.**

Scarce now in the Elk, North East and Susquehanna Rivers. I have seen examples in the Baltimore markets, though none now in our collections.

***Lepisosteus osseus* (Linnaeus).**

A small mounted example recently examined, though not obtained for our collection, was taken in the Elk River. This fish was rather abundant at times about the fisheries along the North East River.

***Pomolobus medioeris* (Mitchill).**

Runs in the Elk and North East Rivers, also Little and Big Bohemia Creeks in their lower reaches. A number of examples examined at the fisheries and in the markets of Baltimore. This fish, also *P. æstivalis* and the next, are taken at Rock Hall.

***Pomolobus pseudoharengus* (Wilson).**

Abundant in the Elk, Bohemia, North East and Susquehanna Rivers, and ascending well above tide or in the small fresh branches. The multitudes examined were from the Little Bohemia Creek, Bohemia Mills, Big Bohemia Creek, Bohemia Bridge, Elk Neck, North East, and from Chesapeake Bay (Baltimore markets).

***Alosa sapidissima* (Wilson.)**

Runs in the larger streams, as the Elk, Bohemia, North East and Susquehanna Rivers, from all of which I have examined material. I have collected, however, only young examples in the Little and Big Bohemia Creeks, and at Elk Neck and North East. In the fishing season many fine examples may be seen exposed in the Baltimore and other markets.

**Brevoortia tyrannus** (Latrobe).

Patapsco River at Baltimore, Big and Little Bohemia Creeks, and Elk River at Elk Neck.

**Anechovia mitchilli** (Valenciennes).

Tolchester Beach.

**Anguilla chrisypa** Rafinesque.

North East, Stony Run, Clearwater Brook near Bacon Hill, Conewingo Creek, Little and Big Bohemia Creeks, Elk Neck and Chestertown. Numerous large ones sometimes seen in the Baltimore markets.

**Hybognathus nuchalis regius** (Girard).

Patapsco River at Baltimore, North East, and Fishing Creek, a tributary to Elk River near Elk Neck. Many examples, and all obtained in tidal waters.

**Semotilus bullaris** (Rafinesque).

Octoraro Creek near Rowlandville, Cecil County; Peddler Run, Harford County.

**Semotilus atromaculatus** (Mitchill).

Stony Run and tributaries of the Octoraro Creek near Porter's Bridge. Also found in the headwaters of the Castleman River near Jennings.

**Leuciscus vandoisulus** Valenciennes.

Very abundant in Stony Run and its small tributaries, and also found in the first tributary below emptying into the North East River. Abundant in small tributaries of the Octoraro Creek near Porter's Bridge.

**Abramis crysoleucas** (Mitchill).

Very common in the Big and Little Bohemia Creeks, Elk River and its tributary Fishing Creek, and also the North East River. My numerous examples from: Little Bohemia Creek, Bohemia Mills, Bohemia Bridge, Elk Neck, North East, Stony Run, Conewingo and in the Susquehanna River, Cecil County; Broad Creek, Harford County.

**Notropis bifrenatus** (Cope).

A few in tributaries of the Big Bohemia Creek.

**Notropis proce** (Cope).

Frequent in Stony Run, Cecil County.

**Notropis hudsonius amarus** (Clinton).

North East River at North East, and the Octoraro Creek above Rowlandville.

**Notropis whipplii analostanus** (Girard).

A few in Peddler Run, Harford County, and Conewingo Creek near Conewingo (estuary). Abundant at Gynn Falls near Baltimore, and in Stony Run.

**Notropis cornutus** (Mitchill).

Abundant at Gynn Falls near Baltimore, Stony Run, Conewingo Creek, and the Octoraro above Rowlandville.

**Notropis photogenis amœnus** (Abbott).

Stony Run, and Conewingo Creek near Conewingo.

**Rhinichthys atronasus** (Mitchill).

Many examples from Stony Run, first tributary of North East River below Stony Run, clearwater Brook near Bacon Hill, tributaries of Big Bohemia Creek, tributaries of the Octoraro Creek near Porter's Bridge, Cecil County; Peddler Run, Harford County; headwaters of the Castleman River near Jennings, Garrett County.

**Hybopsis kentuckiensis** (Rafinesque).

Very abundant in Stony Run, the Conewingo Creek, the Octoraro Creek near Octoraro, above Rowlandville and near Porter's Bridge, Cecil County; Broad Creek, Harford County; headwaters of the Castleman River near Jennings, Garrett County. This species delights in rapid or turbulent foamy streams, and is a fair pan fish.

**Exoglossum maxillingua** (Le Sueur).

Common in Stony Run, Conewingo Creek and the Octoraro Creek above Rowlandville.

**Cyprinus carpio** Linnaeus.

Found in the Little Bohemia Creek and Piney Creek. I have also examined many examples in the markets of Baltimore.

**Catostomus commersonnii** (Lacépède).

Abundant in Stony Run, Conewingo Creek near Conewingo, the Big Bohemia Creek and at Jennings.

**Catostomus nigricans** Le Sueur.

Stony Run and Gynn Falls.

**Erimyzon sucetta oblongus** (Mitchill).

Common in Clearwater Brook near Bacon Hill, Stony Run and the Big Bohemia Creek.

**Ameiurus catus** (Linnaeus).

Many examples from North East, Elk Neck, Chestertown, Big and Little Bohemia Creeks. Many also seen in the Baltimore markets.

**Ameiurus nebulosus** (Le Sueur).

I have examined many examples from the Big and Little Bohemia Creeks and at North East, Cecil County. Others from Broad Creek, Harford County.

**Schilbeodes gyrinus** (Mitchill).

Once taken at Gynn Falls.

**Schilbeodes insignis** (Richardson).

Conewingo Creek near Conewingo.

**Esox americanus** (Gmelin).

Frequently found in Clearwater Brook, Cecil County, and Broad Creek, Harford County.

**Esox reticulatus** Le Sueur.

I have found it in the Little Bohemia Creek.

**Umbra pygmæa** (De Kay).

Abundant in Clearwater Brook, in the Big Bohemia Creek, and at Elk Neck.

**Fundulus majalis** (Walbaum).

Patapsco River near Baltimore, Tolchester and Chestertown.

**Fundulus heteroclitus macrolepidotus** (Walbaum).

Very abundant in all fresh tidal waters. My examples from the Patapsco River, Tolchester, Chestertown, Elk Neck, Fishing Creek, North East, and Big and Little Bohemia Creeks.

**Fundulus diaphanus** (Le Sueur).

Abundant in the Gunpowder River, Patapsco River, Big and Little Bohemia Creeks, North East, Elk Neck and Fishing Creek

**Cyprinodon variegatus** Lacépède.

Tolchester and Chestertown.

**Tylosurus marinus** (Walbaum).

North East River at North East, Elk River at Elk Neck, and Little Bohemia Creek.

**Hemiramphus brasiliensis** (Linnæus).

One purchased in the Baltimore market, said to have been taken in Chesapeake Bay.

**Menidia beryllina** (Cope).

Abundant in the Patapsco River at Baltimore, the Big and Little Bohemia Creeks, and the Elk River at Elk Neck.

**Menidia menidia notata** (Mitchill).

Abundant in the Patapsco River at Baltimore and at Tolchester.

**Apeltes quadracus** (Mitchill).

Found in the Gunpowder River, the Big Bohemia River and Fishing Creek, the latter a tributary of the Elk River below Elk Neck.

**Scomberomorus maculatus** (Mitchill).

Specimens examined in the Baltimore markets were said to have been taken in Chesapeake Bay.

**Selene vomer** (Linnæus).

Included as Mr. T. D. Keim assures me he has examined 4 examples secured at Rock Hall several years ago.

**Pomatomus saltatrix** (Linnæus).

Many examined in the Baltimore markets.

**Enneacanthus gloriosus** (Holbrook).

Little Bohemia Creek and Chestertown.

**Lepomis auritus** (Linnæus).

North East Creek, Conewingo Creek, Octoraro Creek near Rowlandville, Little Bohemia Creek, Fishing Creek tributary to Elk River near Elk Neck, and Stony Run.

**Eupomotis gibbosus** (Linnæus).

Big and Little Bohemia Creeks, North East, Elk Neck, Fishing Creek, and Stony Run.

**Micropterus dolomieu** Lacépède.

Little Bohemia Creek.

**Perca flavescens** (Mitchill).

Big and Little Bohemia Creeks, North East, Fishing Creek near Elk Neck, and Octoraro Creek near Rowlandville. Many examples in the Baltimore markets.

**Boleosoma nigrum olmstedii** (Storer).

Patapsco River at Baltimore, Big Bohemia Creek, Stony Run, Conewingo Creek, Octoraro Creek near Rowlandville, and tributaries near Porter's Bridge.

**Roccus lineatus** (Bloch).

Found in the Big and Little Bohemia Creeks at North East. I have examined many in the Baltimore markets from Chesapeake Bay.

**Morone americana** (Gmelin).

Big and Little Bohemia Creeks, Bohemia Mills, North East and Elk Neck. Many Chesapeake Bay examples seen in the Baltimore markets.

**Archosargus probatocephalus** (Walbaum).

Several large ones seen in the Baltimore markets said to have been taken in Chesapeake Bay, likewise many examples of the next species.

**Cynoscion nebulosus** (Cuvier).

**Leiostomus xanthurus** Lacépède.

Many from the Big and Little Bohemia Creeks, Tolchester, Patapsco River at Baltimore, and others in the Baltimore markets from Chesapeake Bay.

**Micropogon undulatus** (Linnaeus).

Many from Chesapeake Bay in the Baltimore markets.

**Tautoga onitis** (Linnaeus).

Young in the Patapsco River at Baltimore.

**Cottus ictalops** (Rafinesque).

Headwaters of the Castleman River at Jennings.

**Cottus gracilis** Heckel.

Stony Run.

**Pseudopleuronectes americanus** (Walbaum).

Several from Chesapeake Bay in the Baltimore markets.

**Achirus fasciatus** Lacépède.

Big Bohemia Creek.

### VIRGINIA.<sup>3</sup>

Several collections were made at Watchapreague, in Accomac County, in May of 1911. The Academy is also indebted to Mr. T. M. Milliner for additional material from this region. Besides these I have examined many species in the Norfolk market and at the fisheries at Virginia Beach in 1909. All with the \* are from off Cedar Island.

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<sup>3</sup> An interesting collection of fishes was obtained in the Cape Fear River region of North Carolina in May of 1908 by Dr. H. A. Pilsbry. *Fundulus nottii* (Ag.), *Gambusia gracilis* Heck. and *Heterandria formosa* Ag. are from the Greenfield mill-pond at Wilmington. The following are all from Southport. *Anguilla chrysopa* Raf., *Mugil cephalus* Linn., *Trachinotus carolinus* (Linn.), *Chenobryttus gulosus* (Cuv.), *Lepomis punctatus* (Val.), *L. incisor* (Val.), *Eupomotis gibbosus* (Linn.), *Micropterus salmoides* (Lac.), *Perca flavescens* (Mitch.), *Centropristis striatus* (Linn.), *Orthopristis chrysopterus* (Linn.), *Hæmulon plumieri* (Lac.), *Otrynter caprinus* (Bean), *Calamus leucosteus* Jord., *Diplodus holbrookii* (Bean), *Cynoscion nebulosus* (Cuv.), *Bairdiella chrysura* (Lac.), *Leiostomus xanthurus* Lac., *Micropogon undulatus* (Linn.) and *Paralichthys lethostigmus* Jord. Gilb. *Lepomis punctatus* was previously only known from South Carolina to Florida.

\**Petromyzon marinus* Linnæus.

\**Mustelus mustelus* (Linnæus).

\**Raja erinacea* Mitchill.

Large examples of *Acipenser sturio* examined at Watchapreague and Cedar Island, though none preserved.

*Anguilla chrisypa* Rafinesque.

Young found on Parmores Island and others, besides adults, in Locustville Branch.

\**Pomolobus mediocris* (Mitchill).

\**Pomolobus pseudoharengus* (Wilson).

\**Alosa sapidissima* (Wilson).

Many examples of *Opisthonema oglinum* examined at Virginia Beach.

\**Brevoortia tyrannus* (Latrobe).

Virginia Beach.

*Umbra pygmæa* (De Kay).

Common in upper still reaches of Locustville Branch. *Esox americanus* was also found in the same place, though no examples preserved.

*Fundulus majalis* (Walbaum).

Watchapreague Inlet and about Parmores Island.

*Fundulus heteroclitus macrolepidotus* (Walbaum).

Watchapreague, Cedar and Parmores Islands, tidal reaches of Locustville Branch and Virginia Beach.

*Fundulus diaphanus* (Le Sueur).

Locustville Branch just above tide.

*Fundulus luciae* (Baird).

I found it in small numbers in the little pools on Parmores Island, associated with equal numbers of *F. heteroclitus macrolepidotus*. Many were in high coloration. None were found associated with *Gasterosteus*. I also found this species abundant in fresh pools, near the edge of the salt marsh, in the lower basin of Locustville Branch. In this place they were associated with *Cyprinodon*.

*Cyprinodon variegatus* Lacépède.

Cedar and Parmores Islands, and lower basin of Locustville Branch. Virginia Beach.

*Lucania parva* (Baird).

Common in fresh or brackish pools of Parmores Island.

**Gambusia gracilis** Heckel.

Found in fresh pools, near the sea, at Virginia Beach. Abundant in the fresh-water ditches in the lower basin of Locustville Branch.

**Menidia menidia notata** (Mitchill.)

Watchapreague Inlet.

**Gasterosteus aculeatus** Linnæus.

Very abundant in purely fresh-water lagoons on Parmores Island, and found associated only with *Cyprinodon*. All were quite small, and many of the males with bright scarlet axillary ventral membranes, otherwise the coloration mostly olive-green. This is the most southern locality at which I have obtained this species, and it is also noteworthy that all the individuals were so dwarfed.

**Syngnathus fuscus** Storer.

Watchapreague Inlet.

**\*Scomber scombrus** Linnæus.

I have also examined many examples of the following in the Norfolk markets: *Sarda sarda*, *Scomberomorus maculatus*, *Seriola lalandi*, *Pomatomus saltatrix*, *Seserinus paru*, *Poronotus triacanthus*, *Lobotes surinamensis*, *Archosargus probatocephalus*, *Cynoscion regalis*, *C. nebulosus*, *Sciaenops ocellatus*, *Leiostomus xanthurus*, *Micropogon undulatus*, *Pogonias cromis*, and *Paralichthys dentatus*. Almost all these were said to have been captured in the pounds in Hampton Roads. At Virginia Beach I found: *Sarda sarda*, *Trichiurus lepturus*, *Seriola lalandi*, *Seserinus paru*, *Poronotus triacanthus*, *Cynoscion regalis*, *C. nebulosus*, *Bairdiella chrysura*, *Leiostomus xanthurus*, *Micropogon undulatus*, *Alutera schæpfi*, *Chilomycterus schæpfi*, and *Lophius piscatorius*.

**\*Pomatomus saltatrix** (Linnæus).**\*Poronotus triacanthus** (Peck).**Aphredoderus sayanus** (Gilliams).

Locustville Branch.

**Eupomotis gibbosus** (Linnæus).

Locustville Branch.

**Morone americana** (Gmelin).

Locustville Branch.

**\*Orthopristis chrysopterus** (Linnæus).

Parmores Island.

**\*Stenotomus chrysops** (Linnæus).**\*Lagodon rhomboides** (Linnæus).

\**Cynoscion regalis* (Schneider).

Parmores Island.

\**Bairdiella chrysura* (Lacépède).

Parmores Island.

I have found *Leiostomus xanthurus* at Old Point Comfort.

\**Micropogon undulatus* (Linnæus).

\**Menticirrhus americanus* (Linnæus).

Parmores Island.

*Pagionias cromis* and *Sciænops ocellatus* frequently taken off Cedar Island and brought to Watchapreague, where I examined many.

\**Tautoga onitis* (Linnæus).

\**Spheroides maculatus* (Schneider).

Parmores Island.

\**Chilomycterus schæpfi* (Walbaum).

I have also found *Alutera schæpfi* at Hampton Roads.

\**Prionotus evolans strigatus* (Cuvier).

\**Lophopsætta maculata* (Mitchill).

\**Paralichthys dentatus* (Linnæus).

\**Opsanus tau* (Linnæus).

Also at Hampton Roads.

\**Merluccius bilinearis* (Mitchill).

\**Lophius piscatorius* Linnæus.